Release date: September 19, 2000
For more information contact: Erik Olds (DOE) - (509) 372-8656, or Jean McKenna (FHI) - (509) 376-5742

HANFORD'S PLUTONIUM FINISHING PLANT BEGINS PLUTONIUM SOLUTIONS STABILIZATION

Three Plutonium Stabilization Processes Now Underway at Hanford

A new process to prepare plutonium-bearing nitrate solutions for thermal stabilization, packaging and storage began today at the Plutonium Finishing Plant (PFP), located in the 200 West Area of the U.S. Department of Energy's (DOE) Hanford Site in a 70-square-mile area called the Central Plateau.

On September 18, the DOE Hanford Manager formally authorized Fluor Hanford, Inc. (FHI) to start the process of recovering plutonium from nitric acid solutions via magnesium hydroxide precipitation. The authorization follows formal Operational Readiness Reviews by DOE and FHI. PFP staff will begin their startup plan today, with processing planned to begin September 20.

PFP's 4 metric tons of plutonium are contained in 18 metric tons of bulk material left from defense production and include plutonium oxides, metals, residues, "polycubes" and solutions. The total volume of solutions at the plant is about 4,300 liters, representing about 10% of the inventory.

Magnesium hydroxide precipitation is a chemical process for separating plutonium from the nitrate solutions. The solutions are first placed in precipitate tanks, magnesium hydroxide is added, and the resulting slurry is vacuum filtered. Solid plutonium hydroxide solids left on the filter are transferred to a container and placed on a hot plate to dry. The container is then sent to a small furnace for final thermal stabilization.

Magnesium hydroxide is the third major stabilization process started at PFP since plutonium stabilization resumed at the facility nearly two years ago. Thermal stabilization, started January 15, 1999, converts chemically reactive plutonium-bearing scraps and powders into a safer form by heating the material in small furnaces. Earlier this month, PFP workers began stabilization and repackaging of plutonium residues (that do not require additional stabilization) for eventual shipment to the Waste Isolation Pilot Plant in New Mexico.

"Processing our plutonium solutions represents a major step in reducing risk and allowing us to get on with cleanup and the ultimate dismantling of the PFP Complex, " said Jay Augustenborg, DOE's Acting

Assistant Manager for Nuclear Materials and Facilities Stabilization.

"To stabilize this large inventory of solutions, we installed a new process - with built in safety features - which is based on a very successful process used at the DOE Rocky Flats Site," said George Jackson, FHI vice president for the Nuclear Material Stabilization Project. "The magnesium hydroxide process is a simple but effective system that removes plutonium from solutions and produces solids that can go right into our muffle furnaces for stabilization and eventual final packaging for offsite shipment."

"Converting PFP's plutonium nitrate acid solutions to a stable oxide form is the top priority for the staff," said Westinghouse PFP Director, Bob McQuinn. "That's because plutonium in solution form poses the greatest potential safety risk - a fact noted by the Defense Nuclear Facilities Safety Board in a recent letter to DOE. We're very proud to have solutions stabilization underway."

When preparations began in February 1999, a team of engineers, nuclear operators, craft workers and trainers conducted a pre-design, full-scale mockup of the main process glovebox to identify potential hazards and requirements and to make recommendations for all the major steps from conceptual design through fabrication, testing and installation.

"Installing a new system gave us an unusual opportunity to identify important design enhancements to improve the gloveboxes we would be working in from a safety and efficiency perspective," said PFP nuclear process operator Ed Kauer.

Added Operator Larry Rosane, "We analyzed the glovebox designs to eliminate potential hazards and to maximize equipment placement to assure visibility and ease of reaching necessary components within the glovebox."

Kauer and Rosane were part of a PFP team that traveled to the vendor site in Idaho Falls when fabrication was completed to test, train and develop procedures for the new equipment to work out any bugs in the system before it was installed at Hanford.

###

RL 00-095

Historical Note: The U.S. Department of Energy's Richland Operations Office manages the Hanford Site in southeastern Washington State. Hanford was established during World War II as part of the top secret Manhattan Project to produce plutonium for nuclear weapons. Weapons material production was halted in the late 1980s. The Hanford Site is now engaged in the world's largest cleanup effort to deal with the legacy of radioactive and hazardous wastes that resulted from the plutonium production era. The U.S. Environmental Protection Agency and the Washington Department of Ecology regulate Hanford's cleanup program under a long-term compliance contract called the Tri-Party Agreement. This agreement sets the framework and timelines on the cleanup work so that Hanford meets environmental standards. Hanford cleanup is focused on three outcomes: restoring the Columbia River Corridor for other uses, transitioning the Central Plateau to long term waste treatment and storage, and preparing for the future.

For questions or comments about this page, please send email to Theodore_E_Erik_Olds@rl.gov